ABSTRACT OF THE DISCLOSURE

Network configuration hierarchy information is maintained using flexible mechanisms and methods for establishing routes and transferring information between nodes in ad-hoc data communication networks using on-demand multicast and unicast techniques. Communication nodes use network topology information to build and maintain a dynamically mobile, wireless, ad-hoc network capable of efficiently routing both unicast and multicast traffic. Network nodes that facilitate the collection and distribution of network topology and routing data are dynamically selected, configured, and maintained. Network traffic overhead necessary for maintaining and distributing network routing table information is held to a minimum and efficiently distributed across the network, thereby reducing the potential for network traffic bottlenecks due to network overhead processes.